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GAY TIMES.

WAYS FOR BOYS

TO

MAKE AND DO THINGS

BY

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WAYS FOR BOYS TO MAKE AND DO THINGS.

I. — SOME COMICAL KITES.

"UNCLE GEORGE, I wish you could come out in the shop and show Willie and me how to make that kite you were telling about last winter."

It was a very kindly and venerable old gentleman that was thus addressed by his nephew, a lad about fifteen years of age. "Well," said uncle George, "I am busy now, but Saturday morning I will try to be on hand, and I would like you to have all ready for me at least a dozen nice, clean barrel hoops, as straight-grained as possible; and ask your mother to make a pan of flour paste, and give you a bundle of old rags, for there is little better to make a

FIG. I. FRAME.

really fine-looking kite-tail than rags of any kind." With this uncle George went off to his office where he seemed to be always writing learned books.

FIG. 2. LAUGHING BOY.

Saturday morning, when uncle George appeared in the shop, he found awaiting him not only his two nephews, but a great pan of smoking hot flour paste, also a large bundle of all kinds of rags, a pair of shears, a sash brush, a ball of twine and a package of old newspapers; but what most attracted his attention was the enormous pile of barrel hoops.

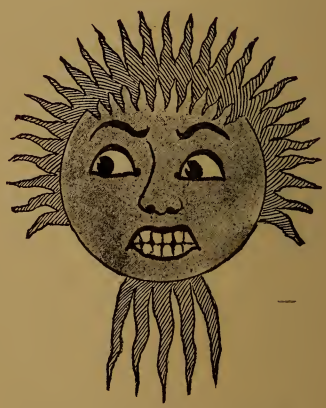


FIG. 3. WILD MAN KITE, *a*.

"I am glad to see so many good hoops," said he, "but we will have no use for those made of split saplings, because the bark on them would be difficult to cut, and they are heavier than those

made of clear wood, while bark don't materially increase the hoop in strength." Hereupon he took from under his arm a large roll of something, as well as a package from his coat pocket, and laid both on the table.

He took first a straight-grained hoop and said

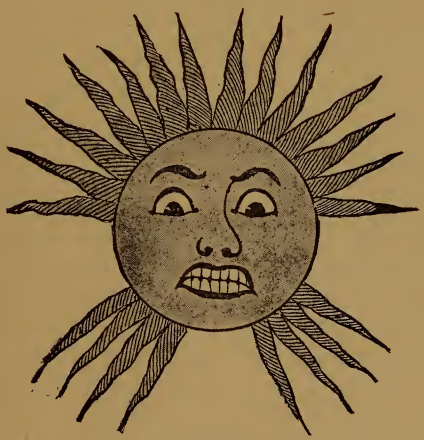


FIG. 4. WILD MAN KITE, *b*.

to his nephews, "If hoops were scarce I should very carefully try to split this into two, but as they are plenty, I will use a good sharp plane upon it to reduce it to the proper size, which will be generally not more than half the width of the original hoop. That done, you see I take two or

three tacks and drive them directly through the hoop; then I give each one a tap on the point to rivet it."

Next he opened the package he had taken from his pocket and took from it some copper wire, which he wound around the hoop on one side two or three times, and then stretched it directly across the hoop and cut it off, being careful to leave it long enough to twist around and fasten. Then he ran another piece in the same way across the hoop at right angles with the first wire. "This," said he, "will strengthen the hoop and support the paper against any strain it may encounter in the wind." (*Fig.* 1.)

Next he opened the long roll. "I think a sheet of this pink tissue paper is appropriate for this kite, which I call 'Laughing Boy.' I will first mark out the size of the hoop upon it, and then cut the paper about an inch larger all around; this will give me plenty of room to fold and paste over the hoop; and now that it is done, you can see the barrel hoop already resembles a kite. Now I might use some black ink, with

a camel's hair pencil to make the different markings that I mean to put on this blank rosy face, but we would find that both ink and water-colors are too transparent to be of any value in the distance — so I will cut out of this dark, opaque brown paper eyes, nose, and mouth; and I also cut out of white tissue paper the eye-balls and a good set of teeth for the laughing mouth (*fig.* 2). Of course it is necessary to cut away the pink immediately under where the white will come. If you would like to have your kite look like a wild man (*fig.* 3), you can do it in this manner: take three or four of your newspapers and cut them into zigzag strips, without being careful as to regularity, only leaving as a heading to your fringe a strip that is about the width of the hoop, for the purpose of pasting on the kite. This

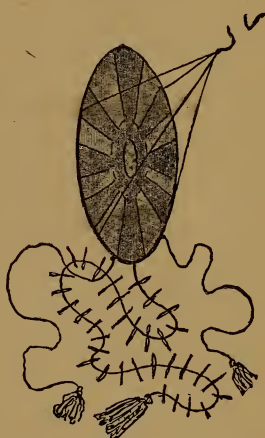


FIG. 5. LISTING KITE-TAILS.

furnishes him hair and whiskers, and you can give him a funny goatee by cutting the zigzags longer. You see that he now looks quite wild." (*Fig* 4).

FIG. 6. HOOP KITE, PROPERLY HUNG

"And what do you think is the best way to make kite-tails?" asked Willie.

"Well," answered uncle George, "if you can get some good strips of woollen listing, from a tailor's shop, you can make one out of that, and you can tie on the end a tassel formed of extra pieces, and if you find it too heavy, it is easy to take out listing enough to leave the kite perfectly balanced. But as I have only two short pieces of listing I will put them both on the same kite adding thereto a longer tail in the middle for oddity (*fig.* 5). Now I will leave you to practice in making up three or four plain kites out of these hoops and this pink and yellow tissue paper."

After dinner uncle George found that the boys had made no less than eight or ten kites, very neat

ones too. They were so very good indeed that he at once set about giving them instructions as to "hanging the kite" — a very important point.

"The best way," said he, "to hang these hoop-kites is to turn the kite face down; then with a lead pencil make four plain marks on the hoop, each about midway between where the wires are tied; I then carefully stick my lead pencil through the tissue paper at these points, and turn the kite face up. Now I measure across the kite for the upper hanging string; and I add to that almost one half more for the lower hanging string; and then fasten the two strings together exactly in the middle; afterwards I tie the two shorter ends, one in each of the upper holes and the longer ends at the lower holes. Now you see when I hold the kite up by the knot in the hangings, the hoop does not hang horizontally, but the tail end of the kite is some distance lower than the other end; this is exactly what is wanted

FIG. 7. WASHERWOMAN.

(*fig.* 6). You need not follow these measurements strictly in practice, since if you want the kite to pull hard and catch a slight breeze, make the hangings of nearly equal length; and if the wind seems too strong shorten the upper strings."

FIG. 8. OWL KITE.

"Now," continued he, "I will show you how I should manage with these other kites if I were a boy. I will begin with this bright yellow one. Let us transform it into a Washerwoman by putting upon her head a frilled cap; you see that I make her hair out of opaque paper, and the frills of her cap out of white tissue paper which will flutter in the wind as a real cap would, and as the hair did on the wild man this morning (*fig.* 7). Here is an owl which I cut out of opaque blue paper—you will perhaps say you have never yet seen a blue owl; I believe you—and I don't suppose that you ever saw a flat owl, like this either; but we won't mind trifles like these. You cannot tell the difference when the kite comes against the sky. Paste

over the eyes some white tissue paper, and cut out a piece of the colored tissue paper at the same place on the kite. Then cover the whole back of the owl with paste and stick it fast to the tissue paper (*fig.* 8). In like manner I make this eagle (*fig.* 9), and this duck (*fig.* 10). So can you make whole flocks of bird-kites. You can also make others consisting of regular forms (*fig.* 11), cut out of tissue paper and pasted together; you can put papers of different color upon the various shapes; only if you wish to produce the most brilliant effect you will paste together the different shades of blue and orange, purple and yellow or red and green; these mingled with white or gray. You see that I try these three schemes of color in these three kites, although two of them I will put together as you see by bringing them beside one another and fastening them in two places by means of our flexible wire. I call these Twin Kites (*fig.* 12); but that does not prevent your putting on them the most diverse subjects; for instance, upon one you can make a dog eagerly chasing a cat, that will be

running for life across the other. It is a good plan for those of you who find a difficulty in choosing good forms to draw upon these 'mathematical kites,' (as I will call them for the sake of distinction), to look at and copy the figures that are printed upon almost all oilcloth. For I notice that they are generally simple and can be easily made with no other drawing tools than a ruler and a pair of compasses.

To hang these Twin Kites: In the first place take two strings measuring each one of them one half longer than the distance between *a* and *b;* tie the first string in *a* and *b;* the second string tie in *c* and *d*. Then measure down each string one third of its distance from the top; bring the two strings together accurately; then tie the flying string around firmly at this point (no slipped knot). You will now find your kite well

FIG. 9. EAGLE KITE.

hung if every point has been observed. Be sure and ascertain the fact that the hangings of the kite pull the same on each hanging.

"I will now show you how I make another variety of this kite which I call the 'Jumbo Kite.' I still use the familiar hoop as a foundation, but I no longer paste paper over the whole kite-frame.

FIG. 10. DUCK KITE.

"I merely cover the surface of the animal or bird represented with appropriate color and quality of paper. I copied this elephant from one of the pictorials, using a familiar method of enlarging a drawing. With care either of you could do quite as creditable a piece of work. You first divide the engraving into any number of perfect squares; then, marking out on paper the size of the barrel hoop, divide that into the same number of squares — of course they are much larger. Now whereas it might prove difficult for you to enlarge the drawing without this help, yet by making the

squares on the engraving sufficiently small, you can readily make a good copy. It is simply necessary for you to draw into each large square of the kite the corresponding portion of the outline that appears in the smaller squares on the engraving. It will do no harm to number the squares in both the engraving and your drawing of the hoop. You notice that the squares on your hoop drawing are not all of them perfectly *square*, for where they come to the circumference they are all bounded by curved lines. Never mind that, only be sure that all of the rest are perfectly square. After a few

FIG. 11. COLOR KITE.

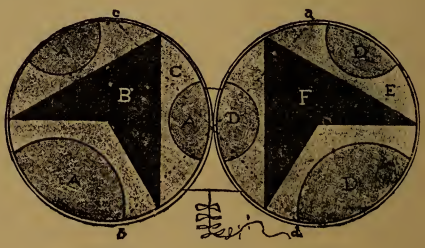


FIG 12. TWIN KITES.

trials I will warrant you to succeed to your own satisfaction, whether you have any natural talent for drawing or not. But to go on with my Jumbo Kite (*fig.* 13). You take a piece of flexible wire, either copper, brass, or annealed iron wire, and going around the outline closely, and using a pair of bending pliers, you follow accurately every bend and curve and angle — and you have *a wire elephant* in outline. Now, with some gray paper I cover my wire elephant, putting on him a red blanket with a blue belt, and marking in with black ink the ears, and tusk, and putting the line in between the legs. Then I fasten him firmly to the hoop with extra wires running to the animal from every side of the hoop, taking advantage of course of those points where he comes in contact with the hoop to

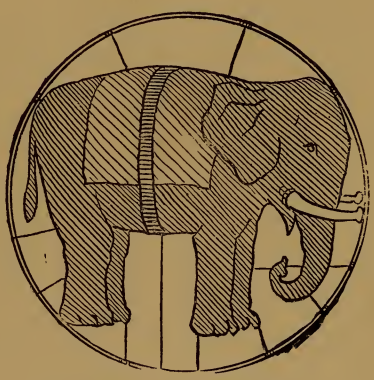


FIG. 13. THE JUMBO KITE.

twist a wire firmly around there; and after hanging and fastening a tail to it, the elephant will fly as well as any bird, and," continued uncle George, "if boys are constituted as they were once, the more singular the object that can be placed on a kite, the greater will be the fun. So if you choose you can imitate me in making a rabbit (*fig.* 14), a camel, a lion, a whale or any other beast, flying bird or swimming fish. But there is one specialty that I want to tell you about —and that is how you can make Fourth of July Kites — kites that will explode a bunch of fire crackers while they are up in the air, or set off a pin wheel or a Roman candle. In the first place it is well to have a special kite — that is, one covered with sheeting instead of paper, because it is less inflammable, and it is a good plan to make the sheeting almost thoroughly fireproof by soaking it in strong alum water, and it is good to put up the kite with hempen twine, for generally the wind is

FIG. 14. RABBIT KITE.

stronger in the night, and should the twine break the kite would be lost in the dark. You can choose any shape for your kite that you like — a common four-cornered kite is as good as any. Fix on its front some flexible wire, to which you will fasten your fireworks; but you must have at the same time another wire fastened to the sticks of the kite in such a way that it will support a stick of punk that crosses the fuse of the fireworks at some point; or you may have a piece of safety fuse timed so that it will touch the fireworks off at a given time. It is a fine sight to see half a dozen of these Fourth of July Kites in the air at the same time shooting off their different kinds of pyrotechnics in the dark so mysteriously. You can also do what has often before been done; that is — fasten a conductor's lantern upon the tail of your kite; for it is great fun for boys and their grown-up friends, too, to see the light constantly moving back and forth across the sky without ceasing."

II.—HINTS FOR YOUNG PEDESTRIANS.

IF I could inspire ten wide awake boys with a fondness for pedestrian exercise I should be quite satisfied to jot down some hints on walking tours suggested out of an experience of many excursions, aggregating several thousand miles of walking.

A self-reliant lad, of good constitution, should be able to get along by himself for a week or two, and to find his way through almost any part of the United States without other assistance than civil speech and a small map; and if he is not a self-reliant lad I know of few things that will do more to develop his pluck, and cultivate a habit of thinking and acting for himself, than walking. Mind, I do not mean walking about a sawdust ring with the object of scoring a higher number of miles than some other contestant; that is a degradation

of natural powers, and is not likely to benefit body or mind; for nerves and muscles are kept on a strain that often produces bad effects when the walk is over; and in plodding over dull ground or empty floors the thoughts are tied down to the work and the surroundings instead of being free to roam, as when the walker is in open air and in the midst of beautiful scenery.

In the first place, you want at least a week for your trip. If you have more time to give you will be in better trim the longer you walk, as you should aim to increase your distance a little every day. Many people unaccustomed to long walks are exhausted by a ten-mile tramp; but by beginning, say with seven or eight miles, and increasing a mile or so daily, walkers become able to pace off forty miles a day and be none the worse for it. The object of a pedestrian trip is not, however, to ascertain how much or how fast you can walk, but to see the country, gain new experiences, and enjoy yourself. Of course, in order to do this you must attain a reasonable degree of speed and endurance, otherwise you will find walking a poky affair. To

find yourself at night near the place you left in the morning is discouraging, for you will begin to consider life too short to see much without the assistance of horses and railroad trains.

Lay out your route before you start, calculate your expenses, and supply yourself with money enough to meet them as well as to provide for contingencies. Arrange for the reception of letters at various points, allowing two days between the time of writing and of receiving for distances over one hundred and under five hundred miles from home. By planning your trip before starting, as you may with the aid of maps and guide books, you will know exactly what you are undertaking and will avoid mistakes and confusion. Be sure that you know where you are going and that you are posted as to the points of interest along the line of march.

Do not cumber yourself with useless luggage. If you carry more than three or four pounds of "traps," you will be tempted to turn about and take them home before you have been more than two hours on your journey. If you intend to camp

out every night you must be content to go heavily weighted and to put up with many discomforts. You will sleep cold, you will get wet, you will be obliged to carry a tent, hatchet, pan, pot, cup, knife, fork, spoon, and some provisions, and you will be inclined to doubt if the fun equals the trouble, unless you accompany a jolly party and have the whole summer before you. Here is my whole equipment for tours of any length ; it is all I took on a trip across the continent, and were I to visit Europe I should add nothing to it :

(1) A soft leather satchel, about ten by twelve inches, slung from the shoulder by a strap. It contains (2) a gossamer rubber overcoat, (3) a nightgown, (4) a collar, (5) a neck-tie, (6) a guide-book, or map, (7) postal cards, (8) comb, (9) toothbrush, (10) "telescope" cup; and room is still left for packing small minerals or photographs of places that I visit. In my pockets I carry (11) a watch, (12) sketch book, (13) pencils, (14) knife, (15) diary, (16) toothpicks, (17) handkerchief, (18) money, (19) and a book for reading during bad weather and at inns in the

evening. I also carry (20) a stout cane, which gets to be a companionable sort of thing, and may be of service as a weapon. It is worth carrying for the sense of protection you receive from it, if for no other reason. The rubber overcoat is indispensable in showery weather. The nightgown should be indispensable to everybody, for it is unhealthful and uncleanly to wear the same clothing day and night. Even when compelled to sleep in barns — and there are worse beds than a haymow — I laid aside at night every vestige of clothing worn during the day, allowing it to air and dry thoroughly until morning. It is a luxury to slip out of your dusty clothes, damp with perspiration, and pleasant to find them fresh and serviceable when you awake. Clear water is the best adjunct to a toothbrush in the care of the teeth. Soap and towels you find everywhere, so there is no need of taking them. By all means carry a note book, or diary, and make a daily jotting of your distances and adventures. Though you write but five or six lines a day, those little hints will serve in after years to strengthen memories of what will probably

be classed among the happiest days of your life. So with the sketch book. The roughest and hastiest of my sketches, though of interest to nobody but myself, calls up a hundred circumstances and puts me back among the hills in a twinkling. Be earnest in your sketching, and let your drawing, although but an outline, be as true as you can make it. My sketch book is carried in a large pocket inside my coat.

Now as to clothes: It is plain that you should not set out upon a two-hundred-mile walk dressed in broadcloth, kid gloves and patent leathers. Take your every-day suit, see that all the pockets are sound and the buttons sewed on tightly. Be sure that your shoes are thick-soled, well oiled and broken in and, if you are going to climb mountains, tell the cobbler to put soft iron nails into the heels instead of hard iron or steel; for the latter become smooth and slippery, making your footing unreliable on steep ledges. There is no need of suggesting that you may paddle about barefooted, now and then. As you are boys you will certainly do that before you have been a day from home; but take

smooth roads for it. Bathe your feet every night, and if they are a little tender put soap on your stockings. You will see from my inventory that I carry no stockings except those that I wear. It is more convenient to wear out the pair you start with, washing them now and then, than to carry extra ones. When they are no longer serviceable throw them away and buy new ones. You may buy them at country stores for fifteen cents. Wear a flannel shirt with gauze underclothing next to the skin. Let the shirt be one of those convenient arrangements with a rolling collar that you can turn down your neck on state occasions, placing over it a linen or paper collar, and a scarf. As the collar and tie conceal all traces of the shirt, nobody knows that you are not arrayed in the finest linen. How do I get my shirt washed? In this way: my nightgown is arranged with collar buttons, and I conceal the front with the collar and scarf, wearing it in place of my shirt while the laundress is scrubbing the dust out of that garment. Flannel shirts need washing but seldom where underclothing is worn, a good shaking often

sufficing to get the dust out of them. The night-gown, collar, handkerchief and underclothing should be washed and ironed for you within eight hours, if you make the laundress understand that you can wait no longer for them.

You will find it so difficult to organize a pedestrian party that you may as well make up your mind at the outset to go alone. For a day or so you may feel the lack of company, but it will take only a short time to accustom yourself to it, and you will find great delight in the absolute liberty you will enjoy. I have never succeeded in finding a companion for a longer excursion than twenty-five miles. No matter what plans are made in advance, at the last moment one pedestrian finds himself up to his ears in business, another has a sore toe, and another has paid his tailor's bill and hasn't a dollar left. I have long given up hope of walking in company, but one is seldom lonely where nature is beautiful, and there is always enough to think about without talking. Even in seemingly well-assorted parties if one of the number proves to be lazy, or sulky, or dissents from

schemes in which the majority concur, or can not walk fast, or wishes to linger in uninteresting places for selfish reasons, or is always expressing dissatisfaction with the route, or complains loudly at the little privations of travel that should be subjects of merriment instead of melancholy, or has some hobby that he indulges, to loss of interest in his walk, or is vulgar or vicious in his talk or habits, the whole trip may be spoiled. There should be in a party the cheerfulness, delight in nature and singleness of purpose that you would feel alone, and it is difficult to find this, for wherever people are assembled together, differences of opinion arise.

Supposing you have started upon your tramp. The sun shines, flowers and foliage sweeten the air, birds sing in the wood yonder, the brook bubbles its cooling music beside the road, the distant hills are clear and blue. Very likely you have seen the landscape hundreds of times before, but it has a new charm now, for you are, perhaps for the first time in your life, absolutely free. Steal into some cornfield by the wayside and stand

on your head for a few minutes to relieve the immense enthusiasm that this feeling is certain to awaken, and resume your walk. You have eaten a hearty breakfast, and your appetite is, no doubt, healthy enough to fill your landlords with some anxiety when you begin your depredations in their dining-rooms, but do not eat a big dinner at noon. If your means are limited you can not afford it, if your time is limited the hour you will spend at the table will be a heavy sacrifice, and if your stomach is heavily loaded you can not walk as blithely as you did before dinner. Take your heartiest meal later in the day. At noon, or thereabout, knock at some farmhouse door and ask for bread and milk. You will receive enough for three, your bill may reach fifteen cents, but it is more likely to be ten, and you will be in better trim to continue the walk than if you had been eating meat, vegetables and pie. I have often obtained lunches at farmhouses that were almost equal in variety and abundance to a regular dinner. Here is what a man in the Catskills once set before me, after apologizing for the emptiness of his pantry: cold meat, pre-

served fruit, cake, bread, pot-cheese and fresh cider. Now guess the amount of his bill. Thirteen cents! Don't be bashful about asking for bread and milk, at least in any farmhouse of respectable size and appearance. It is the one thing sure to be found, it is nourishing, and though the charge for it, if one is made, is so low that you feel compunctions of conscience for not paying it twice, remember that money goes farther than in town, while the lunch costs your worthy host the merest trifle. For dessert, help yourself to fruit and berries from the wayside. If benighted, storm-bound, or astray, you will have little difficulty in getting the good farmer folk to give you a lodging over night, offering to pay them, of course, for their trouble. They will perplex you somewhat with their curiosity, but if you talk cheerfully and frankly they will like you and your stay will be pleasant.

Unless you are well supplied with money do not stop over night in cities and large towns upon your route. Arrange your trip so that you can pass through them and put up at the tavern in a village

beyond. Not in the suburbs, for there the hotels are wretched, but in some country settlement; there the beds will be clean, the tables well-supplied, the charges will be moderate, and you will not be compelled to "dress up" to an alarming extent on account of the company you will meet. Always ascertain the amount of your bill in advance. If you are compelled to stop in a city it will be wiser, unless your stay is of several days, to engage rooms and pay for only such meals as you have, than to lodge in a pretentious hotel where you pay full day's board if you are there only two hours. Should you lose your way, or find yourself belated and compelled to spend the night in the open air, contrive some sort of covering to keep off the dew. A tree is better than nothing. Do not light a fire unless the night is cold, for it will attract bugs, moths and flies by hundreds; but if you do light one, sleep with your feet towards it and make sure that nothing in the vicinity is likely to catch the flame. I doubt if your first night on the ground be passed in very sound sleep. You will better enjoy thinking and telling about your experience after-

ward than undergoing it at the time. Mysterious murmurs will be heard in the branches, soft footfalls and gliding noises will come from thickets, night birds, crickets, katydids and frogs will talk persistently, now and then you will start up prepared to affirm that you heard a whisper, you will wonder if there are snakes, skunks, weasels and rats in the vicinity, and it may be some hours before you realize that the queer noises are only produced by wind and harmless insects; then your tired head will sink upon the grass, you will thrash about and partly wake at intervals, and will presently sit up to rub your stiff elbows and discover that it is morning. Before lying down, remove all hard things except watch and money from your pockets, as they will press into your flesh when you lie upon them, and hurt you. Then turn up your coat collar and button your clothing well about you, for dew will fall and the night be chilly. If your hat or cap is too good to sleep in, tie your handkerchief about your head. Ease your feet by partly unlacing or unbuttoning your shoes, and be sure that your shirt is not tight about the neck. Use

your satchel, or nightgown, as a pillow, your rubber overcoat as a blanket, a heap of grass or leaves as a mattress. You will rest more comfortably if you will make a hollow in the ground about three inches deep, for your shoulder to slip into, and another like it for the hip. I don't recommend sleeping out of doors "for fun." I have tried board floors, wagons and freight cars, and have found them, with a little dressing of weeds and grass, pleasanter beds than bare ground.

As to a "stamping ground," all parts of the country offer attractive pedestrian routes, though I should fancy that the plains and prairies might become monotonous to the walker. Among regions favorable for walking, I can, from experience, recommend the White and Green Mountains, Catskills, the Lehigh region, Hudson, Connecticut, Housatonic, Delaware, Potomac and Shenandoah valleys, the New England coast from Cape Cod to Portland, Western New York and Niagara, and the regions about Montreal and Quebec. These districts are penetrated by railroads and the telegraph, so that in case of accident, sickness, or loss

of funds, you could return or communicate with home at once.

The walker may pleasantly vary his route by returning over different roads from those he set forth upon. Here is a sample route, taken from one of my summer tramps: Boston to Alton Bay, N. H., across Lake Winnepeseogee by steamer, Centre Harbor, Campton, Pemigewasset valley, the Pool, Basin, Flume, Franconia Notch, Profile, Echo Lake, Franconia, Bethlehem, Fabyan's, Mt. Deception, Mt. Washington, Crawford bridle path over the Presidential Range to the Crawford House, White Mountain Notch, Bartlett, Glen road and return, Iron Mountain, North Conway, Lake Ossippee, Portland, Salem, Lynn and Boston. It is sometimes practicable to establish one's headquarters in the centre of an interesting region, striking out in various directions from that point. Thus, in the Catskills, the village of Hunter affords a convenient point of departure for Hunter Mountain, Stony Clove, Kaaterskill Clove, Plattekill Clove, South and North Mountains, Cairo, Windham, Lexington and Grand Gorge.

The young traveller who has the entire summer before him, and a purse long enough to attempt such an undertaking safely, may adapt the following route to his liking by cutting from or adding to the list of interesting points, going over some portions of the country by rail, and perhaps accepting the numerous invitations to ride that farmers, travelling from town to town, extend to people they overtake upon the road. Starting up the Hudson River from New York visit Sunnyside, the home of Irving; Tarrytown and its quaint Dutch church; Sing Sing and the State prison there; the military school and old forts at West Point; Storm King, highest of the Hudson hills; Newburg, and Washington's headquarters; Saugerties, from which point a detour can be made, embracing some of the finest portions of the Catskills, returning to the Hudson River at Catskill village; Albany and the capitol; Troy; Saratoga and its famous springs; Glen's Falls; Fort William Henry; down Lake George by steamer; Ticonderoga and its historic ruins; down Lake Champlain by steamer, stopping at Port Henry or Essex for a brief run into the

Adirondack region; Port Kent and Au Sable Chasm; Burlington; up the Winooski, ascending Camel's Hump and stopping at Montpelier; Wells River; Woodstock, N. H., from which point make a tour of the White Mountains similar to that just outlined; Boston, or Connecticut valley, to New York. There! Some of the grandest and most beautiful scenery in the world is yours to enjoy upon this trip. Or, if that programme is not sufficiently ambitious, you may omit the walk across Vermont and extend your trip from Port Kent to Montreal and Quebec, descending into the White Mountain region from the North.

The interest of your walk will be much increased if you will glance through the history of the region you intend to explore; or, if you have a scientific turn you might post yourself on the geology, mineralogy or botany of the country.

III. — HOW TO MAKE AND PITCH A TENT.

FIRST, to familiarize yourself with your proposed task, make a sketch of your intended tent (*fig. A*), which should be six feet high and cover a square on the ground six feet each way.

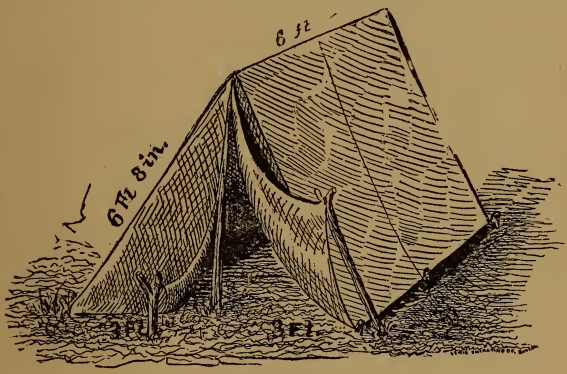


FIG A

Such a tent will require, of yard-wide cotton, thirteen yards; two yards for the front, two for the back, and nine for the main cover. The cost, if made of unbleached cotton, will be about $1.30.

The permanent poles (those to be used near

home, or wherever transportation can be had) should be of sawn stuff. The two uprights should be six feet nine inches high, sharpened at the foot and cut off square at the top with holes bored in them large enough to hold the good-sized nails which will also pass through holes in the ridgepole as shown in *fig. B*.

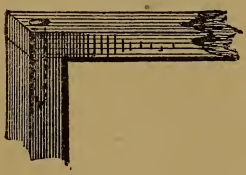


FIG B

When your camping-ground is far from home, and you have no transportation, poles can be cut in the woods, roughly trimmed, leaving short pieces of the branches for hanging things on, fewer being left on the pole in the doorway than on the one at the back (*fig. C*).

Tent-pegs ought to be cut in the woods (*fig. D*), the main stem sharpened and the branch cut short, yet left long enough to hold the loop of the tent-cord.

FIG D

The top should be square, to be hammered easily.

Take two yards of cotton and cut the piece diagonally, as in *fig. E*. Now "wide-awake" boys know that this diagonal, being the hypothenuse (or slant line) of a right-angled triangle with a base one yard and an altitude two yards, is equal to 2.23 yards, nearly two and one fourth yards long. These two pieces will make the *door* of your tent. In like manner two yards more, similarly cut, will make the back of the tent. Cut the remaining

FIG D

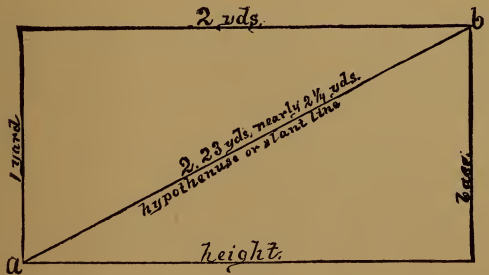


FIG E

nine yards into two pieces and sew them together so as to make them one piece two yards wide and

four and one half yards long. Mark the centre of each side of this piece *c c*, as in *fig. F.*

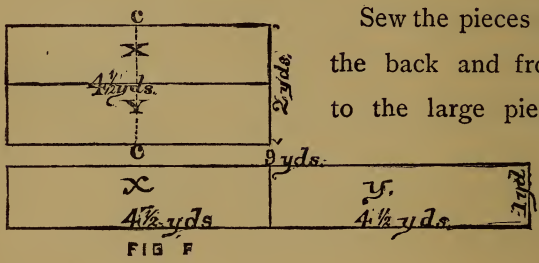


FIG F

Sew the pieces for the back and front to the large piece,

the longest sides of the triangle fitting the lines marked *c d*, as in *fig. G.* The line from *c* to *a* is

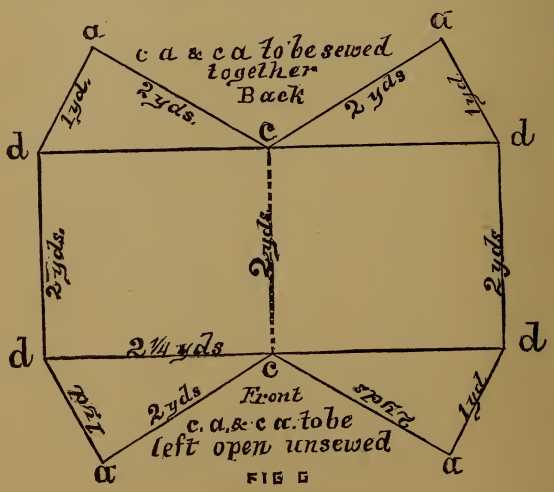


FIG G

to be sewed up for the back, and a similar line left open for the door.

Lay the ridgepole on the ground. Drive a stout pin like this (*fig. H.*) in the ground at each end of the pole opposite the nail-holes. Loosen these pegs by slight blows of a hammer and pull them up.

FIG H

Set your uprights firmly in these holes. Put your ridgepole across from top to top; fasten with nails passed through the holes in ridgepole and uprights. Throw the tent-cover over the poles and fasten the four corners down firmly by pegs driven into the ground about three feet from the feet of the uprights; one boy should hold one peg in the loop, another boy opposite to him stretching the tent tightly in driving.

Drive four more pegs; one in the middle of each side of the square space — the one at the door is only used in bad weather or at night.

At other times the door-flaps are thrown back. If you have a fly (an extra tent-cloth over the ridge-pole), you will need to buy nine yards more, also to provide longer cords to reach the ground. A stout cord should be sewed as a welt all around the bottom of your tent. The loops for the *eight* pegs will be *nine* in number; two of them at the door being fastened to one peg.

When your tent is up for actual use, a ditch should be dug close to the tent to carry the rain-water off; in order to keep the interior sleeping ground dry. It is also best to pitch your tent with the back up hill on a slight incline; the ditches in that case need be but three — at the back, and on the two sides; these should extend, however, considerable distance beyond the front of the tent.

In camping out each person ought to have an oilcloth and a blanket, as it is frequently necessary to sleep on the ground. When not pressed for time, elegant bedsteads may be made of saplings stretched upon a framework resting on four upright forked stakes driven into the ground. These *spring-beds* must be put on the right and left sides

as you enter your tent, leaving an aisle in the middle.

Each boy in the party ought to have a light hatchet, carried in a "frog" on a stout leather belt,

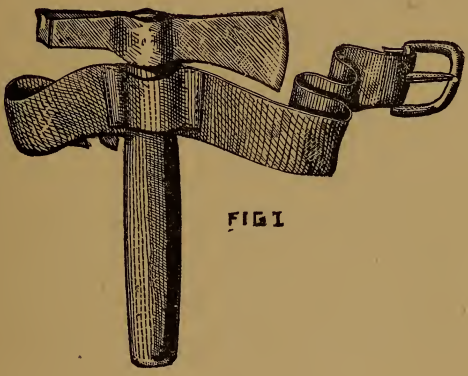


FIG 1

with the edge to the front and covered with a leather casing, unless the wearer be a very careful fellow. *Fig. J* shows a shape I have always found very convenient.

IV. — TREE CULTURE.

I HAVE often thought that were I a country boy, and my father would let me use some of his land, I would have a small tree plantation of my own; for I should like to have something growing which I might watch and train and study and take pride in. Often driving in the country, I see how a group of trees here, and a belt there, and a solitary one yonder, would add to the picturesqueness, to the actual money value and the productiveness of the farms. If my father would let me use the land, I would begin my tree culture at once. He would become interested in my trees, I think, by the time they were large enough to plant out, and I should have talked so much about the spots where they would look well and do good, that the whole family would make it an event, and come out to see the

future groves and wind-breaks and shade trees set into their final places.

I heartily commend this work to the country boys who read this.

I doubt, to begin with, if you fully realize the importance of trees, though I daresay some practical farmer in the vicinity will tell you that a belt of trees at the north of his farm makes the season several days longer for him than his neighbor whose crop land is exposed to the cold northern blasts, and that it often happens that on farms protected by trees, melons and peaches are ripened, while upon the exposed farms they always fail; and I can tell you of good books to read on the subject; but right here I will speak of one or two points.

When you read in the papers every spring of the great freshets which sweep away houses, bridges, and all movable things, do you realize that this mischief is caused by the destruction of the old forests? It is; for the snow shaded by the trees used to melt slowly, and the earth, kept porous and free from frost, held, like a sponge, the melted snow and rains, and all through the season there was a steady supply of

water in the brooks which fed the rivers; but since the trees have been destroyed the ground has become hard, and often, too, the soil has been entirely washed away and the land itself made worthless. The rains and melting snows rush off these bare hills in torrents, and, joined by thousands of similar streams, fill these rivers to overflowing and cause these freshets. Besides, trees are the purifiers of the air we breathe; and when we think of the uses to which the different kinds of wood are put, and our dependence upon the forests for the supply, we wonder that any one can be thoughtless enough to start the great forest fires which every year are destroying more timber in the United States than is used for all sorts of mechanical purposes together.

To succeed with your trees, you should become intimate with nature and see how she manages. You should know how the tree lives and breathes. If you will take a plant that has grown for some time in a small flower-pot and carefully turn it out, you will see on the outside of the ball of earth many little whitish root-tips. Every tree has millions, perhaps, of just such little roots. They are the mouths through

which the tree drinks, and it is the loss of these which causes the tree to die when carelessly transplanted; for they are easily broken, and if exposed to the sun for even a few minutes, they will often become lifeless. If we may speak of the root-tips as mouths, we can call the leaves the lungs of the tree, for it is through them that the tree breathes in from the surrounding air the gases it needs. Thus you should reason that while the leaves and roots are in active operation it would be a great shock to the tree to attempt to transplant it. This must only be done when the tree, with its roots and leaves, is at rest. With our leaf-shedding trees, this time is after their leaves have fallen, between late autumn and early spring.

You may think it will be an easy thing to go into the woods some day and dig up the trees you want to start your plantation; but unless you take very small trees, scarcely more than a foot high, you will find that the roots are so long, and have wandered under so many stones, or are so interwoven with the roots of other trees, that it will be impossible to dig them out in good-enough order to hope of their living.

For this reason trees from nurseries succeed better than those collected in the woods, because the roots of the wild trees have often gone far in search of water, while those in the nurseries, by cultivation and frequent transplanting, have been kept in a compact ball, and the tree can be dug up without injuring the root-tips at all.

Rather than attempt much with the larger trees, then, I advise you to start your collection by means of a little nursery. In this you can plant such trees as you can collect in the woods and pastures, and the others that you may obtain if you follow my suggestions. You can begin with small beds. The soil should be prepared in the same manner as for a garden bed, light and loose.

As soon as the frost is out of the ground you must start on your tree-collecting excursions, taking with you a spade, a large open basket, and a cloth to cover over the roots to prevent them from becoming dry. If you insist on collecting trees over two feet high, you will have to take the covered wagon, and one or two friends to assist. Be sure not to attempt too much for one day, for you not only have to

collect the trees, but to plant them after your return. It will be best to collect trees of nearly the same size on any one trip, for then they can all receive the same treatment, and your nursery beds should be so arranged that trees collected at various times can be planted with other trees of the same kind and size.

On your trips you ought to know what kinds you are collecting; and unless you are acquainted with the forest trees you will have to invite a companion who can point them out. You can tell the seedling trees you find, by noticing under or near what trees they are growing. The most young trees will be found where the older growth is scattering, and it will be useless to look for trees where cattle are allowed to roam, for they will surely have browsed them all off. Among those you will readily find are oaks, birches, maples, ashes, hickories, poplars, walnuts, the beach, chestnut, sumac, sassafras and basswood; and at the South and West, the tulip tree, catalpa, liquid-amber, magnolias and hawthorns; and nearly everywhere the cedars, pines, hemlock and spruces are common evergreens. It will be well to avoid trees which grow naturally in

swamps, as they require more water than they obtain in cultivation. For New England the best native trees to plant are the white and red pines, the white ash, the white and overcup oaks, the walnut and butternut, the hemlock and white spruce; because, besides being fine trees, they will, if they become large and are cut, be of value for their timber; for you know how scarce all timber trees are becoming.

Having selected a place for your nursery not likely to become very dry in summer, and one that you can easily water should there be a drought, plant the young trees in straight rows about one foot apart in the beds, unless they are more than a foot high, when they should be two feet apart or even more. Use every care to prevent the roots from becoming dry, by sprinkling them, and by keeping a wet cloth over the pile while you are at work. You will of course dig the trees with great care to save as many of the rootlets as possible; and the holes in which the trees are to be planted should be of ample size. Place a tree in one of the holes and spread out naturally all the little roots, and if there are any broken ones, carefully prune them off. Throw some

fine earth upon the roots and settle it among them. Next fill in the rest, and with both hands press it firmly down so that the tree is left about an inch lower in the ground than it was growing before.

You can, if you like, raise trees from seeds. This is very interesting, as the manner in which the different species germinate is curious and instructive. It will be an easy matter to get the seeds of such trees as hickories, maples, oaks, walnuts, and the beech, honey-locust, and elm; and, too, many of the seedsmen throughout the country are now making a specialty of tree-seeds. Some seeds, however, require to be planted as soon as they ripen, or to be protected in some manner, for after a short exposure they fail to germinate. Among such are the oaks, walnuts, hickories, magnolias and chestnuts. These should be planted in the fall, and if sent to any distance must be packed in rather damp earth or moss. Plant the tree-seeds in rows about an inch apart, and the second year transplant into another bed about one foot apart.

But those of you who think the best way will be to buy trees already started, so as to gain a year's

time, can easily order them of Robert Douglas & Co., of Waukegan, Ill., who put up and forward to any address, postage paid, for one dollar, one hundred year-old trees. Their list contains many varieties to select from. You can form a club and buy 500 or 1000 trees, and they will come in excellent order, and, divided among the club, each of you will have an assortment.

While young all the cone-bearing trees require to be shaded during the hot summer months. The best shade is made by nailing laths, about two inches apart, to some long strips of wood, and arranging them on posts over the beds. A shade can be made of boughs stuck into the ground; but this is neither neat nor permanent.

If you succeed, you will before long have a nursery of perhaps 500 trees ready to transplant to permanent situations. If you have taken good care of them, you will have become interested in landscape gardening and have read many books and articles about it, and you will greatly enjoy a chance to display your taste in arranging your cherished trees in groups, and by planting out the walls and out-buildings. This will

justly require a great deal of thought, as upon it depends entirely the result of beauty, shade and shelter, when, years later, you are perhaps the owner of the place yourself.

It is impossible to give explicit directions for this work, as every plantation requires special treatment; but in general you should avoid mixing too many sorts in groups, nor should trees of different habit be brought into too close contrast.

At the final planting, be sure to give the trees a good start. It is not enough to dig holes and place the trees in them. If the region is gravelly and the soil poor, you must remove the earth from a space four feet or more in diameter and to a depth of two or three feet, and replace it with a mixture of muck, loam and manure. Let us suppose you planting a tree five feet high, that the earth has been properly prepared, and the hole, a large one, has been dug. You can do your planting alone, but there is no reason why your sister should not help you — in fact the girls can do a great deal at arboriculture, particularly about the beds of seedling trees. Take one of the trees from the carefully covered pile, and stand

it erect in the hole. Having made sure that it is at the right depth, which should be a little lower than it was growing before, spread out the roots in the direction in which they naturally go and cover them with earth to the depth of a few inches, working it in among the roots. As you do this let your assistant move the tree up and down quickly several times to insure the earth penetrating all the spaces between the roots. Throw in more earth, and treading it down the tree will be held in position so that you may take a final look to be certain that it is exactly straight and fitly placed before the remainder is filled in. Level off the earth, leaving it a little higher than the ground around it, for the rains will settle it considerably. Every spring you should dig around the trees, and through the summer the weeds must be kept down. It will add materially to the health and the rapid growth of your trees if you manure them well every fall, and that throughout all their growth they are well mulched with any available material.

I have only spoken of spring-planting; but you may, if you like, plant trees in the fall as well, although the spring is the best time for most species.

There are, however, some trees that begin to grow so early in the spring that they must be transplanted in the fall. Among such are the larch and several trees which flower before the leaves are developed. If you fortunately have plenty of land at your disposal, it will be possible for you to establish a little aboretum or museum of living trees, although it will require great care to prevent bad effects by too closely contrasting very different sorts of trees. You would in this way be led to desire to study the trees botanically, and form a scientific knowledge of their various modes of growth and structure. Such a collection could be extended, even in New England, to contain some hundreds of trees.

It is quite possible for you to make tree culture profitable by proving to your neighbors what valuable accessions trees are to the farms. You may thus be able to sell a great many of your trees, and also plant them out for the purchasers. I shall wait with interest to hear of your commencing work, and will answer any questions you may need to ask me.

V. — A BOY'S MENAGERIE.

A MENAGERIE!" I hear in tones of dismay, from mammas in more than thirty States (besides several Territories). But, dear mothers of boys, this is a miniature affair; the performers who risk their necks and "jar the house down," are not your precious sons, but wooden figures, or dolls; the cages of wild animals are no roaring, noisy, living creatures, but harmless beasts of wood or — wait till I tell you all about it, first assuring you it is one of the most quiet, as it is the very most absorbing, amusements I ever knew; for where in this broad land is there a boy, or even a girl, who does not delight in a menagerie?

Now, you who have some money to spend, and you who have only nimble fingers for capital, let me tell you how to make a "perfectly gorgeous" affair, complete from tent flag to the baby elephant.

First, you must have a tent. The framework of this is an umbrella. You who have money may buy one of the large white ones used in warm weather to shield the drivers of trucks and wagons, the larger the better, provided you have plenty of room to spread it in. You without spare cash may beg of mamma an old one. This tent may be set up on an attic floor, or on an old table not too good to put nails into; but the best way is to make a platform, which can be placed wherever you choose. An old boy by my side, who has had experience of boy's contrivances, suggests that the cheapest way to get the platform is to buy for a quarter, at any shoe store, a long shoe or boot box, the boards of which are exactly what you want. Make the platform by laying the long boards side by side till it is wide enough, nailing two strips across on the under side to hold them in place. On this you may build your tent and its ropes and belongings, and when you wish to use it, or display it to your friends, you can lift the whole thing and set it upon a table or a couple of carpenter's horses, in the parlor if you like.

To prepare your umbrella, saw off from the handle the ornamental part, which will bring the stick just about to the edge of the cover when closed. Get a piece of board not less than six inches in diameter, and bore a hole through the middle exactly the size of the handle, so that when you push it in it will be a snug fit, and will hold the umbrella upright.

Now take off the cover, and cut a pattern of one of the pieces of which it is composed. By this pattern cut new covering out of unbleached muslin, which you can buy for five or six cents a yard. The boy without money may cover with the strongest parts of old sheets. In cutting the cloth after your pattern you must leave *half an inch* each side for seams, and on the narrow edge of the piece let the cloth project *four inches*, to be afterwards cut into scallops and hang, like a real tent.

To sew the seams a sewing machine is best, because strongest, but if you have no machine, and no sister or mother able to do them for you, you must bravely attack them yourself. Take strong linen thread and run them together as well as you

can. There is another way to make a cover, much easier but not quite so "ship-shape." Get unbleached sheeting, which comes very wide, say two yards wide if your umbrella is a common size. Buy a piece as long as it is wide, and find the ex-

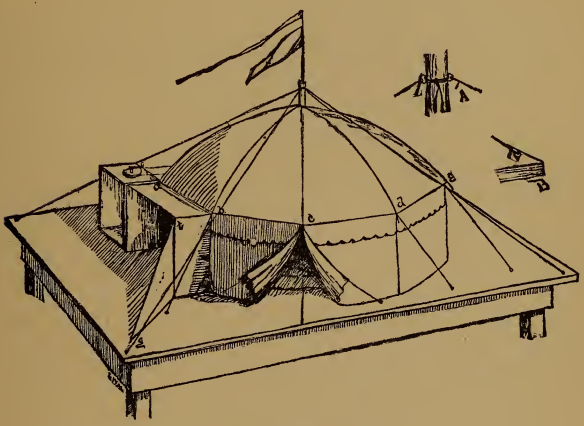


FIG. I. — TENT.

act middle by folding it twice, once each way. Now cut a small hole in the middle, and cut through *one* of these folds from this hole to the edge. Lay this over the frame, putting the hole over the top of the stick, and the open side at the back of the tent. It will be too wide, that is, the cloth will cover the umbrella and have enough left to lap over where it

is cut apart. Do not sew up this place, but let one side lie flat over the other as it will; then with the scissors cut off the edge all around, leaving four inches for scallops as before. The scallops look best bound with bright red dress braid, at a cost of five cents, but the binding may be omitted.

Next saw off the ferule end of the umbrella frame, and bore a hole straight into the stick to hold a flag pole. If you have no flag you can buy one for a few cents; but if you are a household of brothers and sisters, you will enjoy making a dainty flag. Having made your flag socket, put on the cover, and sew it to the ribs, as the original one was sewed. Just before sewing at the end slip over each rib a common brass curtain ring (costing two cents a dozen), *to hook your side walls into.*

Now open the umbrella which has become the roof of a tent, and stand it up in its block. Measure from the edge of the frame to the floor, and take a strip of the unbleached muslin *an inch wider* than this length, and long enough to go all around the outside edge of the umbrella, and *three inches over.* This is for the side wall, and it looks pretty

bound with red braid, but it will answer with a simple hem, to keep it from tearing easily.

Look now at *Fig.* 1 and see how this tent wall is arranged. On the back side, that you cannot see, it is in one piece. From *a* to *b* there is no wall, for the convenience of the operator who sits at that end of the tent. On the lines *c*, *d* and *e*, the wall is cut open its whole length, so that it may be turned back, and both sides should be hemmed. When the show is in operation the two sections of the side wall between the letters *c* and *e* are turned up and laid upon the roof, giving the spectators, who sit in front of the table, a good view of the inside. From the corner *b* the side wall you see turns out to make the piece *b f* (held in place by a *U*-shaped wire), and is cut off slanting to make the wing *f g*.

Now turn your umbrella upside down, lay the side wall where it is to go, and at every point where it passes a rib, sew a hook. Of course at *c*, *d* and *e* you will want a hook on each piece. You can buy dress hooks in large sizes, or you can make them of wire. They are to hook into the rings you arranged to hold up the wall. To keep the bottom

down you must drive a wire staple into your platform or table exactly under each rib, and sew a hook on the wall to match it. Five cents' worth of staples will be enough.

The tent must have guy ropes to keep it steady, and make it look like a real tent. For these you may use common twine. From the centre post, just above the top of the tent, you want four strings, going out in straight lines (as you see in the cut), drawn snug and tied to staples which you have driven in proper places. From each point at the end of the umbrella ribs, you must tie another string, draw it out snugly, and tie to a staple, as you see in the picture. In *Fig.* 1, in the upper corner you may see the method of fastening the guy ropes to the centre post. Four curtain rings are slipped on to a string which is tied tightly around the post, and into each ring a guy rope is fastened. The proper way to secure the lower end is also shown. In the cut this is a screw eye, but a staple will do as well.

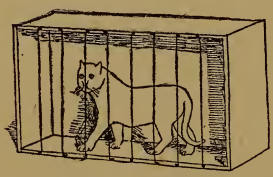


FIG. 2. — CAGE.

Now for the inside. First, just within the walls must be a ring of animal cages all around, excepting from *a* to *e* (*Fig.* 1) which is left for the operator and the spectators. The cages are full of wild beasts, and the next thing is to get them — cages and beasts — which is not so hard as it seems. Beg of any friend who smokes, or buy at a cigar store, a number of empty cigar boxes of the ordinary size, enough to reach the whole length when set up end to end on their long edges. To turn the boxes into cages, first take off the covers, and wash off all paper, then paint the inside white, or line it with white paper pasted nicely in. Next get a paper of small gimp tacks, which have neat round heads, and drive in the edge top and bottom, three fourths of an inch apart, and exactly opposite each other (*Fig.* 2). Now take fine black cord, or coarse linen thread, and after fastening one end, weave it around the tacks, as you see in the figure, to make bars.

Your cages ready, to fill them. The really best way is to draw and color the animals yourselves, and this, when drawing is so generally taught, you

ought to be able to do. But if you cannot, then find an old toy book of animals, or else hunt through illustrated papers till you have a collection of pictures of the animals usually seen in a menagerie; lion, tiger, panther, wolf, kangaroo, etc., etc., and monkeys of course. Cut them out roughly and paste each animal carefully on to common cardboard. Let them dry thoroughly under a weight, and then if they are not colored, paint them with water colors, as nearly like life as you can. A colored animal book, which no doubt you or some of your friends have, will help you in this. Let the paint dry, and then cut each animal out on its outlines, leaving the cardboard a half inch longer than each foot. You will have quite a natural looking set of beasts, and on turning back the extra length under the feet they will be able to stand up perfectly. Or you can buy the sets of animals now publishing, all colored to life, and made to stand up, but it is more fun to draw and color them, remember. Push each one between the bars into a cage, strew the floor with sand, and you will be surprised to see how much like life they look.

For elephants and horses and camels if you like to go in the ring, there are two ways to provide. The boy with plenty of money, and time to look for them, may be able to buy the kind he wants, but a more satisfactory way always is to make them yourself. Find pictures of the animals you need, and make them exactly as described for the wild beasts, excepting that you need not provide extra length of feet for standing up, and that you must paint both sides instead of only one.

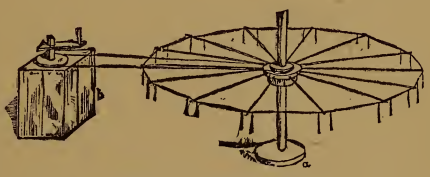


FIG. 3. THE WHEEL.

Next in order is the arrangement by which you operate your performers. The animals that go round in the ring are all worked from above, slung from a wheel which is out of sight under the edge of the tent roof.

This wheel, shown in *Fig.* 3, is easily made. First saw a round block five inches in diameter, and bore a hole through the middle large enough to slip easily over the handle (*a*, *Fig.* 4), then make

another like it only one inch smaller (*d*, *Fig.* 4). Around the edge of the larger one, with an awl, make holes running into the block, and large enough to take in spokes made of the ribs of an old umbrella, or of strong wire. Fit the spokes tightly, wedging them if necessary, and then connect the outer edges of the spokes by a stout cord (*Fig.* 3). This must be strong and firm, or some day it will collapse, and a fine show come to ruin.

When the large wheel is completed, saw out a small one, three inches in diameter, like *h*, *Fig.* 4, and with a pocket knife cut a hollow or groove all around the edge, in which a string can run. Lay this small wheel over the big one, with the centre holes exactly together, and put two screws through both, as you see in *h*. Next slip the two wheels over the handle, up to the spring which holds the umbrella open; then put on, under them, the other block *d*, and push up close to the wheel, so as to support it, but not tight enough to make it work hard. Fasten this lower block in its place by boring a small hole through it (at *k*) and through the umbrella handle, exactly where you

want it to stand. Now by slipping in a piece of wire, *e*, you make a firm rest for your revolving wheel, and on pulling it out you can draw off your wheel, and close the umbrella, or, more poetically, "fold your tent." You will make the wheel move more easily by scattering powdered soapstone on the lower block, where the wheel rests, or by rubbing it well with a carpenter's pencil.

To this large wheel are fastened your horses, and whatever goes around in the ring, and to run it easily and nicely there is a simple arrangement, which you see in *Fig.* 3. (It may be turned with the hands, but not so well.) From the grooved wheel screwed to the hub of the big wheel runs a cord, through two small holes in the tent cover, and around another grooved wheel fastened to the top of a starch box, which is nailed to the table. This wheel is turned by a crank, the parts of which are shown in *Fig.* 4; *b* is the grooved wheel, three inches in diameter, *c* is the rod coming up

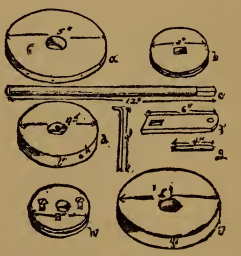


FIG. 4. — PARTS.

through the box, on which it turns, and which you see is cut square at the top, *f* has a square hole at one end which fits over this rod, and a round one at the other end, which receives the handle *g*, by which it is turned. The figures on the diagrams give the size in inches. Now you see when this is arranged, and a string drawn tightly around the two grooved wheels, you may run your wheel as fast as you like, from the outside.

To attach the animals to the wheel, prepare a number of threads of fine black sewing silk, waxed, to make it stiff, in this way: Take small black pins, the finest and smallest you can get, and around each one just below the head, tie tightly a piece of the waxed silk, then bend the pin into a hook. When you have enough of them ready, take one of your horses, tie around his body two threads as near of his color as you have.

Tie one just in front of his hind legs, leaving a little loop on top of his back where it is tied. Tie the other just behind his fore legs, and have another loop there. These loops are for the pin hooks to hook into to hold the horse and keep him

straight. All your ring animals must be prepared in the same way, and you should be careful to get them of only two heights, one for horses, and one for elephants. Now take your silk threads with hooks on, and tie them in pairs, to the cord which forms the rim of the wheel, having the hooks the same length from the wheel, and just high enough to keep the horses' feet from touching the floor, which you must find out by trying it. You can see these threads hanging to the wheel in *Fig.* 3. Now if you wish to have ring processions of elephants, make a second set of threads, and tie them at a suitable height between the others. When using the shorter threads the longer ones may be kept out of sight by hooking the pins over the cord they are tied to.

Do you see how this works? The operator sits behind the entrance to the tent; putting his hand in, he draws two lines with hooks on out towards him, hooks on a horse or camel, and pushes him into the ring; he then moves the wheel a few inches, takes another pair of hooks and hooks on a second animal, and so on. In this way he can

regulate his performers as he likes, and clear the ring in the same way. His seat is so placed that the guests who are looking into the open tent will not be likely to see his hand. Some care is necessary in turning the wheel, not to begin too fast so as to throw the animals out of position. You will need to try it by yourself a little, to learn exactly how to manage it properly.

For performers, I will tell you how to make one, and your own recollection of what you have seen will help you to more.

A pair of acrobats working over a bar will be very attractive, and are not hard to make. Get some thin wood, such as is used in a scroll saw, cut from it the parts shown in *Fig.* 5, and make awl holes where represented. Make two pieces like *a*, four like *b*, eight like *c*, four like *d*. Take a body *a*, lay an arm *b* on each side, and fasten by a string passed through all and knotted on both sides, leaving it loose so that it will work freely. Next the legs. First with a knife shave down two pieces marked *c*, so that the lower ends shall be one half as thick as the upper ones, lay one thin

end each side of a piece *d*, and make a knee joint as above. Having two legs thus made, put one on each side of the body, and make the joint through all five pieces at once, i. e., two for each leg, and one for the body. Now paint your figures as nicely as you can in gay colors or stripes. The effect is very striking.

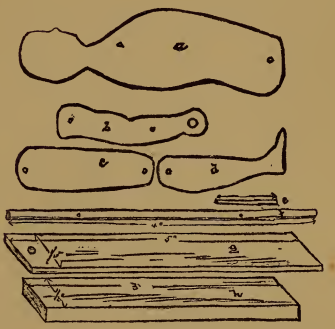


FIG. 5. — PARTS OF ACROBATS.

Make the bar for them by cutting two pieces like *g*, and one like *h* (*Fig.* 5). The lengths are marked in figures; *h* is the bottom piece which must be nailed to the floor, and *g* the post at each end of it, *f* is the bar on which they vault, and it passes through the holes in all four hands, and into the hole in the top of the post on each side. To make them turn a somerset, a stiff wire is passed through each pair of arms at the little holes below the elbow, holding them apart, and another one an inch long (*e*, *Fig.* 5), put through

the small holes in the bars, after the acrobats are in place. Each wire comes between the arms of one of the figures, and as the figure turns, the wire on the arm hits it, and the acrobat goes over the bar. Since you do not want both to turn over at once, you must put the wires in the bar turning opposite ways.

FIG. 6. — ACROBATS.

The arrangement by which they are made to perform, by a crank on the outside, is shown at *Fig.* 6, and being exactly like that which turns the big wheel needs no description. The only difference is, that the cord or band which passes over the grooved wheel, goes down to the floor and through two staples, so that

it may not be in the way of the ring performers. The wheel and crank outside are on the farther side of the starch box, and so not seen in the drawing.

One thing more you may add to the tent with pretty effect, and that is lights. Get the Christmas-tree candlesticks with a wire attached, so that you can twist one around each rod of your umbrella tent, in a circle not far from the stick (for fear of fire). Have the largest and best candles, or they will not burn long enough. A tent thus lighted up is very attractive.

To give an entertainment to your friends, you can arrange a programme something like this: First have a procession of animals around the ring, which you can make one long, apparently endless string, by putting on a new animal every time the turning wheel brings before your opening one which has been around once; after this — when you have used up the animals which are not shut up — have your acrobats perform, with any other things of the kind you may have arranged; then have a showman, made of a small doll dressed very gayly with

a stick or wand in his hand, who shall be hooked on to the wheel (by a thread around his neck or waist) and go around slowly, pausing before each cage to describe and exhibit the animal therein, which he does by means of your voice disguised a little. He should tell something about each creature, especially anything odd or curious in his manner of life. You will easily find interesting stories and facts about animals in books of natural history (especially Wood's, if you can get at that in some library). At the same time, while the showman is talking about the animal, a helper — boy or girl — concealed behind the table, should give imitations of the animal's usual noise, as if he didn't like to be stared at or talked about. For instance, for the lion the helper should "roar" (which I'm sure all you youngsters like to do); for the bear, a growl is appropriate; for a tiger any cat noise, a purr if you can manage it, is very effective. If you have visited real menageries, you will know the proper sounds, the chatter of monkeys, screams of parrots, hoarse barks of the sea lion and others. You can make this part of the entertainment very amusing,

and if you wish to invite your friends more than once, you can vary the remarks of the showman as much as you choose.

Now, a few last words. Give yourself plenty of time to make the whole thing properly. Do not begin in haste, and expect to have it finished in a day or two. Take pains to follow directions carefully. Practice operating your figures till you become expert, and you will be delighted with your success. When all is ready, and you are "well up" in your duties, invite half a dozen friends to see it. If you have a press you may print cards of invitation and the most showy bills you can manage. But I'm sure I needn't tell you how to enjoy it after you have made it.

Let me say that everything described has been made and worked, and the drawings are from the articles themselves. No tools are needed except those found in every home, and no skill beyond that of an ordinary boy, fourteen years of age.

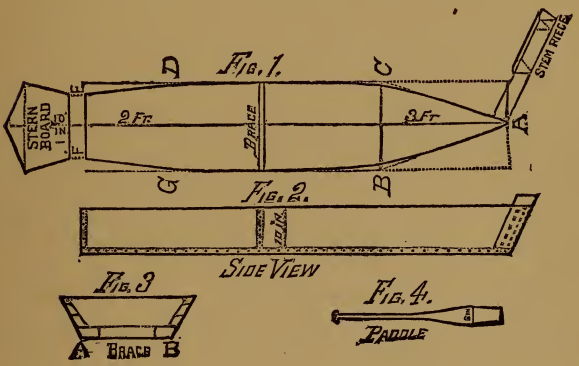
VI.— HOW TO BUILD A SIMPLE BOAT.

EVERY boy living near a pond or stream desires to own a boat, and if he cannot procure one he will "knock together" a clumsy and tottlish raft on which he is sure to get his feet wet, if not a ducking. At any rate, he will have something that will float and bear him up as he paddles around the pond. In extreme cases, I have known of a *dry-goods box* made water-tight and used.

Now I am going to aid these boys with such directions as will enable them *themselves* to build a cheap, simple and safe boat. I used to construct such, and often have I seen a line of boys going to the water bearing boats exactly like this one on their shoulders.

No skill in carpentry is necessary; any one able to use a saw and drive a nail can follow out these

directions with good results. But the cardinal virtue lies in its wonderful cheapness. Two and a half dollars will amply cover the outlay on boards, nails, paint and tar; and it can be completed in two afternoons. I make no claim for beauty; yet



its "lines" are far ahead of most other flat-bottomed craft.

Get an inch-thick pine board, ten feet long and eighteen inches (or two feet) wide, as free from knots as possible. It is better to have it planed on *both* sides, although this is not necessary; but in case you plane but one side give the *planed* side to the water. Also get two half-inch boards of bass (or pine), ten inches wide and eleven feet

long. These latter are for the sides; and I prefer bass because it bends easily.

On your bottom board, three feet from the end, draw the line B C, and from this the lines A B, A C (*Fig.* 1). This will give you the curve of your bow, which you may immediately cut out, not forgetting to round off the corners at B and C so that the sides will bend nicely at these points.

Next cut off the square corners at the stern on the lines D E, G F. This not only will make your boat move through the water more smoothly, but also will improve it in appearance.

The bottom is now all ready for the stem piece and the stern board. The former should be of hard wood (ash or hickory), cut at the same angle as the bow, to which it must be securely fastened by long screws or nails and inclining as in *Fig.* 2. The stern board is of pine, an inch thick; you will make it after the pattern shown in *fig.* 1. This must be nailed to the *end* of the bottom board.

Before proceeding to put on the sides, a brace is needed at the middle, which is made as follows: From an inch-thick pine board, cut out a piece

after the pattern of *fig.* 3, making the line A B the width of the bottom, i.e. eighteen inches (or two feet). Any desired "spread" may be given to the boat by cutting the sides of this brace at a greater or less angle. This should be nailed to the bottom at a point a *little nearer* the stern than the bow.

You are now ready to put on the sides, beginning at the brace and nailing thence to bow and stern. Four-penny nails will do, with now and then an eight-penny for greater strength. Especial care is needed to make a nice job at the bow, and to make as tight a joint as possible.

The sides being firmly nailed on, the brace should then be cut away, down to the dotted line (*Fig.* 3). It will thus serve as a rib at that point, strengthening the sides.

This finishes the wood-work. Now proceed to calk up the seams with old rags, after which give it a good coat of paint. I would advise the free use of tar about the bow (both inside and out), as this is a difficult place to make tight.

Your boat is all completed save the paddle.

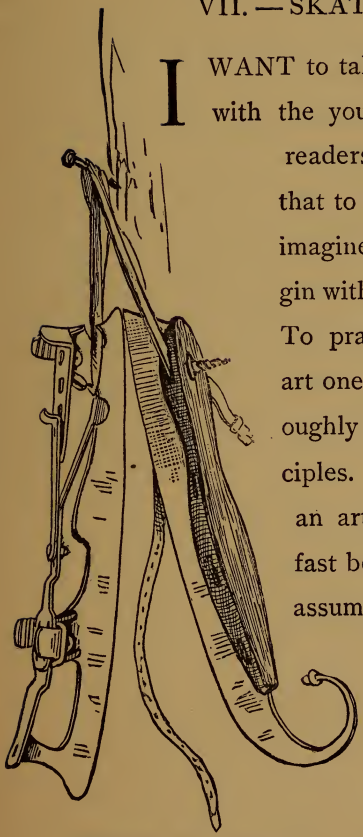
Make this of pine, about four feet long, from the model in *fig.* 4.

The craft may now be safely launched, the navigator sitting either directly on the bottom, or on a seat three inches high.

Further, I would suggest that tin be put on the bow and two or three narrow strips on the bottom to preserve it from rubbing; also that the *seams* should receive several heavy coats of paint.

I trust that any boy following these directions will succeed in his endeavors, and enjoy his boat as much as "*we* boys" used to.

VII. — SKATING.



THE NEW AND THE OLD.

I WANT to talk a little about skating with the younger boys among my readers. And in order to do that to best advantage I shall imagine you *beginners*, and begin with you at the beginning. To practise successfully any art one must understand thoroughly its first rules and principles. As for skating being an art, it certainly is, or is fast becoming such. And I assume that every boy who skates hopes to become an artist in the exercise.

In the first place, as to skates: Down

in the toe of your stocking at Christmas, you found rolled up in a bit of paper one or two or five bright gold dollars; and on the paper written, "*To buy a pair of skates.*" I am glad Santa Claus was wise enough to send the money instead of the skates themselves. The old gentleman is rather old-fashioned in his notions sometimes, and he might have selected an old-fashioned pair. He is apt to think that the old wooden-soled, grooved-iron skate, with its runner curved up into a brass acorn in front, on which he used to dash up and down the mill-stream thirty or forty years ago, is after all the best thing a boy can have to-day. But the manufacture of skates has improved wonderfully during the last few years; and of all things you want a modern skate.

What sort of skate shall you buy, then? You want a "Club" skate, *i.e.*, a skate made entirely of metal, with no wood about it. As for the different styles of Club skates, they are all excellent, and the boy who is possessed of any one of them would seem to have all that a skater may reasonably ask for. In making your selection, lightness combined with necessary strength, and a runner so curved that it

shall touch the ice only for a few inches of its length, are the qualities you should have in mind. Beyond that, your choice will be determined by the method of fastening the skate. That fastening is the best which can be most quickly and conveniently adjusted and at the same time secures the greatest firmness. The screw at the heel, although still somewhat used, has probably seen its day; and with it, it seems to me, had best be discarded the whole system of strapping the skate to the foot. The best skate is now that which has a "clamp" so adjustable by screw or otherwise as to take firmly hold of the sole of the boot. The "all-clamp" skate has a clamp both at heel and toe. And some all-clamp skates are so arranged that a single movement of a lever beneath the skate or behind it operates both clamps and securely locks the skate to the boot. Such are the "Acme" skate and Barney & Berry's "Ice King." When, in place of the heel-clamp, a heel-plate with a "button" fitting into it is used, it requires the fixing of the plate itself in the boot-heel, and often a heel-strap is found necessary.

For a first lesson, choose a piece of ice of mod-

erate roughness. Take plenty of time to learn to stand well and safely on your skates and to get confidence. Your danger as to falling is not, remember, of falling to one side, but backward or forward. Learn to stand up *straight.* There is nothing so awkward as a skater who leans forward. Avoid, too, swinging the arms about. They should be carried easily, much as in walking. Keep the feet close together, toes turned out, and the legs straight and firm.

Having come to feel somewhat at home upon your skates, and being able, perhaps, to move about a little, you may begin at once upon the Plain Forward Movement. With the left foot firmly planted, the inner edge of its skate bearing a little on the ice, boldly throw out the right foot until the outer edge of its skate touches the ice. At the same time throw the right shoulder steadily forward and keep the body balanced upon the right leg as long as possible. Then throw out the left leg and shoulder in the same manner, and so continue. If you begin with these rules well in your head, it will save you much painful experimenting. Having learned to make progress in this manner with firmness and power, you will

have learned to *skate*. Any other movement, simple or complex, belongs to "Fancy Skating." But, first of all, this plain stroke must be thoroughly learned.

The "rolls" forward and backward are the basis of all fancy skating. The forward outside-edge roll is made as follows: The impetus is obtained as in plain skating; but, as the stroke is made with the right foot, the left shoulder is brought forward, the right arm drawn back, and with the face looking to the right, the whole body is swung easily in the direction of the stroke; then the left foot is lifted from the ice, and, being brought forward, is set down a few inches in advance of the right. The same movement is then made to the left, the right skate having now its inner edge to the ice until ready to be lifted. The Dutch roll is performed in this same manner, save that, perhaps, the roll is not quite so broad, the movement being more nearly in a straight line. The

FIG. I.

marks left upon the ice are something as in the figure.

The outer-edge roll leads very easily to the cross

roll, each foot when off the ice being swung, in the latter, *across* the one on the ice and starting in its stroke from the crossed position.

Having become proficient in the various rolls forward and backward, the skater is now prepared to attempt for himself the almost infinite number of figures and movements that make up the rest of fancy skating. Most of these will require long practice. They are, too, for the most part, almost impossible to be described upon paper. You will have to pick them out for yourself, getting what helps you may from those about you who have already acquired them.

A favorite movement, and one easily mastered, is that which used to be familiarly known as "Cutting the Derby." It is now spoken of as the "Left-over-Right," or the "Right-over-Left," and consists in skating in a circle by constantly putting the outside foot over forward and inside of its fellow. A few steps of this figure, thrown in now and then, first to one side and then to the other, makes a very graceful and easy variation of the plain forward roll.

"Cutting the Crab" is another simple figure. While going forward one foot is suddenly thrown out,

turned and drawn heel foremost directly after the other; and the greater part of a circle is then described, the two heels being brought close together and the toes turned straight outward. This is a neat way of coming to a stop if one has plenty of room.

The "Figure of Three" and the "Figure of Eight" have always been well known to skaters. The former begins at exactly the same point at which one would begin in writing the figure, and is performed on one foot, the first part on the outside edge forward, and the second on the inside edge backward. The Figure of Eight is a combination of two circles. A very pretty "Rosette" is made by combining a number of Figure of Eights, as seen in the figure. In this Rosette, it will be observed, the first circle of the first Eight is gone over

FIG. 2.

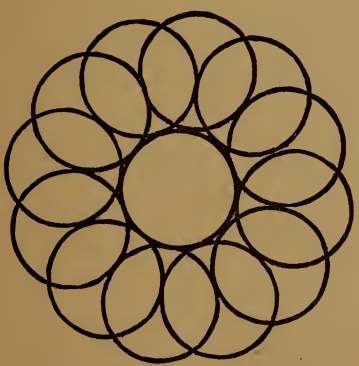


FIG. 3.

again and again, though the second one is constantly changed.

Then there are all the other Arabic numerals to be made, and all the letters of the alphabet, if one be patient and skilful enough. And there is the "Scissors," and the "Grapevine Twist," and the "Virginia Fence," which leaves a mark upon the

FIG. 4.

ice that describes itself, and the "Locomotive," single and double, so called doubtless because the sound of its strokes somewhat resembles the puffings of an engine, and whose track is something as here seen; and there is the "On to Richmond" (cross

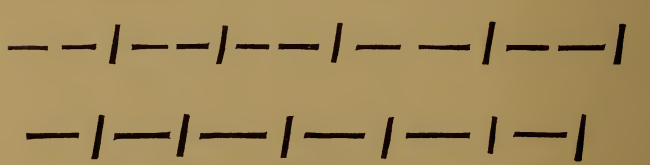


FIG. 5.

one foot in front of the other, and with back stroke

outside edge go backward or forward); and ever so many others.

You should see a programme for a skating contest as set forth by the American Skating Congress. I can assure you that the skaters who carry off the prizes from such contests must indeed be *artists*. And if you could only get hold of one of these Prize Skaters, and he would go to the pond with you, he could teach you more of Fancy Skating in half an hour upon the ice than I could do upon paper in half a year.

One of the pleasantest things about skating is that the girls can enjoy it as well as, and together with, the boys. And this may very well be an additional reason why boys should wish to learn to skate well. A boy would hardly be a real boy at all who was indifferent to the admiration of his young-lady friends, and who would not wish now and then to display a few extra flourishes and figures if the latter were on the pond to see. Besides, the girls, some of them, are getting to skate exceedingly well; and no real boy, again, would like to be excelled by them at a sport in which his superior strength and experience

at out-of-door games ought to give him a decided advantage.

One may have a partner in skating as well as dancing; and having requested the pleasure of skating with a young lady, you two together may execute a great variety of double figures and movements. There is the plain forward movement, of course, you holding the lady's hand, or perhaps with the hands crossed. And you may skate thus, holding a straw between you, each striving to skate so steadily and smoothly that the straw shall not be bent or broken. And you may skate face to face, one backward and the other forward. And you may waltz, or make the Figure of Eight together; or, as you skate forward side by side, with the right hand you may, at one stroke, swing the lady before you to the right, and then, changing hands, swing her to the left again as you strike out in the other direction. And then two couples, skating in one line, may combine this last exercise, and thus the sport be made as social as an in-door entertainment.

VIII. — HOME-MADE SNOW-SHOES.

THESE snow-shoes are wholly of my own contrivance. I use them every winter, and I think other boys will like them. To be sure they are not "stylish" and a fellow might not like to visit the Montreal Carnival with them, but you can have great fun on them in the country, walking around over the snowdrifts in the fields. I have walked on mine over drifts of freshly-fallen snow ten feet high without sinking in more than five inches.

Then, too, they cost "next to nothing." The materials I used can be found on almost any premises. They were as follows:

(1.) Five or six barrel staves (without knots, if possible).

(2.) Six strips of leather, quarter of an inch wide and about three feet long.

(3.) A piece of strap about eighteen inches long.

(4.) Twenty seven-eighths-inch screws, and some shingle nails.

Don't be scornful of this "lay-out." These snow-shoes are for fun, not show.

DIRECTIONS.

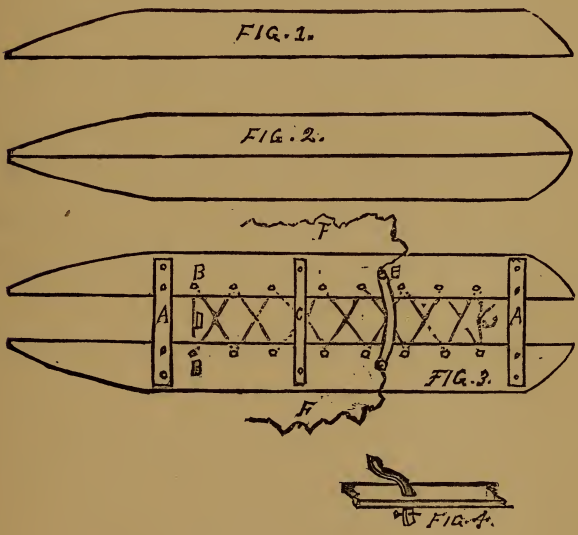
Select four barrel staves about two inches in width. Plain the edges down until they are even, and the staves of the same width.

Then take two of these prepared staves and plane and round off the ends as in *Fig.* 1, so that when placed together they will appear as in *Fig.* 2. Leave the remaining two for the other shoe.

Now take another stave and saw it lengthwise into two strips; one about an inch and a half wide, the other about half an inch wide. From the wider strip cut four pieces six inches long; from the narrower one cut two pieces the same length. Lay aside two of the wide and one of the narrow, for "the other shoe."

Now to put the shoe together: Take two of the planed and rounded staves and lay them side by

side, convex side down of course, with about two inches space between as in *Fig.* 3. Lay two of your wide six-inch pieces on these staves, one at each end where the outer edges begin to curve, as at *A*, *Fig.* 3. Fasten lightly with shingle-nails.



Then observe if the frame thus made looks even; if it does, fasten down the cross-pieces firmly with two screws in each end.

Next, with a three-sixteenth-inch bit, you bore eight holes in each stave along its centre edge, as

shown at *B*, *Fig.* 3. These holes are for the "lacings," *D*. Now tie two of your strips of leather together and, beginning at one end of your frame, run the ends of the leather-strips through the lacing holes, and lace it up, criss-cross, as you would a shoe, fastening the leathers when you come to the other end.

Now place your foot on the frame, toe toward the blunt end, so that your heel will come a little back of the centre. Mark this place, and fasten one of your narrow six-inch strips across at that point, with two screws, *C*, *Fig.* 3. This strip is for your heel to rest upon.

Now cut that eighteen-inch strap into two pieces.

Next, three and one half inches from *C*, toward the front of course, cut a hole at E, through each of the staves large enough to let the strap through; this you fasten on the under side by running a nail through each end of the strap, as in *Fig.* 4. Pass the ends of one of your thin strips of leather, *F*, up through these strap-holes.

Now your snow-shoe is done. You will make the other in the same way.

To fasten the snow-shoe on, you slip your foot through the loop formed by the strap; after this cross the ends of the leather strips over your instep, and then fasten them at the back of the ankle.

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